HISTORIC AMERICAN ENGINEERING RECORD

UT-14

Denver and Rio Grande Western Railroad: Provo River Bridge, 1884-1901-1919
Spanning Provo River on W. side of U.S. 189, 2mi. NE of Orem
Utah County
Utah

Photographs and
Written and Historical Data

Historic American Engineering Record
Heritage Conservation and Recreation Service
Department of Interior
Washington, DC 20243

Denver and Rio Grande Western
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Provo River Bridge

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Location: Spanning Provo River on W. side of U.S. 189, 2 mi NE of Orem.

Date: 1884,1901,1919.

Owner: Denver and Rio Grande Western Railroad

Condition: abandoned 1969

Significance: Significant example of Pratt through-truss bridge. assumed to be of all wrought iron.

Historian: T. Allan Comp, PhD, 1972

THE DENVER, RIO GRANDE AND WESTERN RAILROAD THROUGH TRUSS IRON BRIDGE: 1884

Railroad bridge development has a long and complex history perhaps best summarized by Carl W. Condit in his American Building Art: The Nineteenth Century (New York: 1960). The first "scientifically" designed truss was done in wood by Thomas Pratt of Boston in 1842 and the first iron railroad bridge was completed three years later. By 1861 the first true eye bar construction was in use followed in 1863 by the first pin-connected truss in which all structural members were made of wrought iron. Since the use of cast iron in railway bridges ended about 1870, it may be assumed that the Denver, Rio Grande and Western Railroad span is of all wrought iron construction, although the survey team did not attempt to determine if any cast iron was used in the structure. The bridge is the popular Pratt design in section and employs eye bars and pin connections at major points.

The bridge surveyed was originally one of three spans built in 1884 by the Union Bridge Company of Athens, Pennsylvania. Each of the spans was 165.5 feet in length and the three were designed to carry a narrow gauge railroad across the Green River in Utah. No original plans or photographs of the bridge as constructed in 1884 were

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encountered in research. Sixteen years later the railroad converted to standard gauge and dismantled the three-span Green River bridge. The railroad then engaged the Louisville Bridge and Iron Company to shorten the dismantled spans to 82 feet and widen each to accommodate standard gauge tracks.

One of these modified trusses was installed across the Price River near Wellington, Utah in 1901 and then moved again in 1919 to its present site across the Provo River at the mouth of Provo Canyon where it replaced an 85 foot wooden Howe truss. A letter from the railroad company indicates this line was abandoned in 1969; the land is now owned by the Utah Highway Department.

As surveyed, the bridge is an all-metal Pratt truss, a through truss supported at the level of the bottom chord and in which the end posts are in compression and all posts serve as important bearing members. The bridge is fabricated from riveted iron plates and is a pin-connected structure generally recognized as the standard American practice of the 1880's. To allow for expansion and contraction, one end of the bridge is fixed while the other rests on a roller bearing nest. Wooden railroad ties are placed directly in the iron stringers.

Originally constructed in the same year as the 720 foot Lindenthal twin lenticular steel through truss bridge over the Monongahela in Pittsburgh, and at a time when

structural steel was coming into general use for railroad bridges, the Denver, Rio Grande and Western Railroad iron bridge cannot be taken as a major essay or innovation in bridge construction. It should be noted, however, that as it now exists on its third site and only half its original length, the bridge can be viewed as a testament to the adaptability and flexibility of American railroad bridge engineering during the last quarter of the nineteenth century.

Allan Comp
Project Historian
August 1972

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